

CLAIMS:

1. A process for producing a three-dimensional object, comprising:

a) providing a layer of pulverulent substrate,

b) selectively applying at least one microwave-absorbing first susceptor to one or more regions of the substrate, wherein the one or more regions are selected in accordance with a cross section of the three-dimensional object,

c) treating the layer at least once with microwave radiation, to melt the one or more regions containing the first susceptor to the layer of pulverulent substrate, and, optionally, to melt the one or more regions containing the first susceptor with other regions located in one or more substrate layers situated thereunder, thereabove, or combinations thereof, wherein, said other regions optionally contain a microwave-absorbing second susceptor, and wherein said first susceptor and said second susceptor are the same or different, and

d) cooling the layer.

2. The process of Claim 1, wherein step **a** and step **b** are repeated consecutively for **n** times, where **n** is an integer greater than zero, and wherein step **c** is carried out after steps **a** and **b** have been repeated **n** times.

3. The process of Claim 1, wherein step **a** and step **b** are repeated consecutively for **n** times, where **n** is an integer greater than zero, and wherein step **c** is carried out after each repetition of steps **a** and **b**.

4. The process of Claim 1, wherein steps **a** and **b** are repeated until the three dimensional object is delineated within a matrix comprising one or more layers of the pulverulent substrate, and  
and then step **c** is carried out.

5. The process of Claim 4, wherein step **c** is carried out in a lower construction chamber of an apparatus used to prepare the three dimensional object.

6. The process of Claim 1, wherein step c is carried out in an apparatus other than an apparatus used for carrying out steps a and b.

7. The process of Claim 1, wherein step c is carried out in a commercially available,  
5 food-preparation microwave equipment.

8. The process of Claim 1, wherein the pulverulent substrate has a median grain size of from about 10 to about 150  $\mu\text{m}$ .

10 9. The process of Claim 1, wherein the microwave radiation has a frequency range from about 430 to about 6,800 MHz.

10. The process of Claim 1, wherein the first susceptor comprises a member selected from powders of metals or metal compounds, ceramic powders, graphite, activated charcoal,  
15 water or one or more protic liquids selected from saturated monohydric linear aliphatic alcohols, polyhydric linear aliphatic alcohols, monohydric branched aliphatic alcohols, polyhydric branched aliphatic alcohols, monohydric cyclic aliphatic alcohols or polyhydric cyclic aliphatic alcohols, each undiluted, or in a mixture with water.

20 11. The process of Claim 10, wherein the one or more protic liquids comprise glycerol, trimethylolpropane, ethylene glycol, diethylene glycol, butanediol, or mixtures thereof.

12. The process of Claim 1, wherein the pulverulent substrate comprises one or more  
25 polymers or copolymers.

13. The process of Claim 12, wherein the one or more polymers or copolymers are selected from polyester, polyvinyl chloride, polyacetal, polypropylene, polyethylene, polystyrene, polycarbonate, PMMI, PMMA, ionomer, polyamides, copolyester,  
30 copolyamides, terpolymers, ABS, or mixtures thereof.

14. The process of Claim 1, wherein the pulverulent substrate contains about 0.05 to about 5% by weight of a flow aid.

15. The process of Claim 1, wherein the pulverulent substrate contains one or more inorganic fillers.

16. The process of Claim 15, wherein the one or more fillers comprise glass beads.

17. The process of Claim 1, wherein the pulverulent substrate contains one or more inorganic or organic pigments.

18. The process of Claim 1, wherein the pulverulent substrate contains one or more laser-activatable additives.

19. The process of Claim 1, wherein the pulverulent substrate contains a material which can be fused or sintered via exposure to heat, and which comprises a member selected from coated grains of sand, ceramics, metals, alloys, metal powders or mixtures thereof.

20. An apparatus for the production of three-dimensional objects, comprising

- a means for applying a layer of pulverulent substrate to a platform or to a prior layer of pulverulent substrate,
- a means for applying one or more susceptors to one or more selected regions of the layer of pulverulent substrate, and
- a means for generating microwave radiation.

21. The apparatus of Claim 20, wherein the means for applying the pulverulent substrate comprises a movable apparatus present on an operating platform.

22. The apparatus of Claim 20, wherein the means for applying the one or more susceptors comprises an apparatus movable coplanar to a plane defined by the layer of pulverulent substrate.

23. The apparatus of Claim 20, wherein the means a means for generating microwave radiation comprises a microwave generator suitable for generating microwave radiation in a range from about 300 MHz to about 300 GHz.

24. A molding produced by the process of Claim 1.

25. The molding of Claim 24, comprising one or more fillers selected from glass bead, silicas, metal particles, aluminum particles, or mixtures thereof.

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26. The process of Claim 1, wherein the melting and cooling results in fusion or sintering of one or more layers.